

DEVICE FOR ILLUMINATING ORAL CAVITY

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FIELD OF THE INVENTION

This invention relates to a device for illuminating oral cavity, and more
5 specifically, a bite block comprising a self contained light source.

BACKGROUND OF THE INVENTION

Illumination of a patient's oral cavity is necessary for dental examinations and
procedures. Conventionally, the oral cavity is illuminated by a focused light located
above a dental chair. Illumination takes place through patient's mouth. Dentists are
10 positioned between the light and patient's mouth, which often blocks the light and
creates shadow in the patient's mouth and requires readjustment of the light.

To alleviate this problem, light delivered via fiber optic strands incorporated into
handheld dental instruments is used. Use of fiber optic strands is expensive and
inconvenient because the instruments equipped with fiber optic strands are not
15 comfortable to operate. Also, sterilization is more difficult and causes the fiber optic
strands to deteriorate over time.

What is needed is a simple and inexpensive means of illuminating the oral
cavity.

SUMMARY OF THE INVENTION

20 This invention overcomes the drawbacks in the prior art and provides a simple
and inexpensive means of illuminating the oral cavity. Specifically, the device for
illuminating oral cavity according to this invention comprises a bite block comprised of a
flexible biocompatible sterilizable molded material, for example, rubber or any other

appropriate material known to persons knowledgeable in the relevant arts. The material
25 must be biocompatible because the bite block comes into a contact with the inside of
patients' mouth. It must also be sterilizable for the same reason. The bite block may
be formed by a compression molding process, a transfer molding process, a casting
process, an injection molding process, or similar process known to persons
knowledgeable in the relevant arts.

30 A DC battery, a pressure-sensing switch and a LED light are encapsulated within
the molded material that forms the bite block. The DC battery and pressure-sensing
switch are fully encapsulated within the molded material, whereas the LED light is
partially encapsulated within the molded material and has a partially exposed portion. A
lens can be disposed on that partially exposed portion.

35 The pressure-sensing switch is placed in an "on" position when pressure is
applied to the bite block by teeth of a patient biting on the bite block when it is placed
between the teeth. The pressure-sensing switch remains in an "off" position when
pressure is not applied to the bite block. The pressure-sensing switch is electrically
coupled with the DC battery and LED light such that when the pressure-sensing switch
40 is placed in the "on" position, the LED light is energized causing illumination of patient's
oral cavity. LED light should be positioned towards the area within the oral cavity that
needs to be illuminated.

Due to the relatively inexpensive nature of the device for illuminating oral cavity
according to this invention, it can be disposable. To this end, it can be sterilized and
45 placed into a sealed sterile package by way of the process known to persons
knowledgeable in the relevant arts.

BRIEF DESCRIPTION OF THE DRAWINGS FIGURES

FIG. 1 shows an isometric view of the device according to the first embodiment
50 of this invention;

FIG. 2 shows a side cross sectional view of the device according to the first
embodiment of this invention;

FIG. 3 shows a side cross sectional view of the device according to a second
embodiment of this invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

This invention will be better understood with the reference to the drawing figures
FIG. 1 through FIG. 3. The same numerals indicate the same elements in all drawing
figures. Viewing FIG. 1, there is shown a device for illuminating oral cavity according to
this invention. Numeral 10 indicates a bite block. Bite Block 10 is comprised of a
60 flexible biocompatible sterilizable molded material, for example, rubber or any other
appropriate material known to persons knowledgeable in the relevant arts. The material
must be biocompatible because the bite block comes into a contact with the inside of
patients' mouth. It must also be sterilizable for the same reason. Bite Block 10 may be
formed by a compression molding process, a transfer molding process, a casting
65 process, an injection molding process, or similar process known to persons
knowledgeable in the relevant arts.

Viewing now FIG. 2, numeral 20 indicates a battery means. Battery Means 20 is
fully encapsulated within the molded material that forms Bite Block 10. Battery Means

20 is shown in FIG. 2 as a DC battery. However, it can be any battery known to
70 persons knowledgeable in the relevant arts.

Numeral 30 indicates a pressure-sensing switch. Pressure-Sensing Switch 30 is
fully encapsulated within the molded material that forms Bite Block 10. Numeral 40
indicates a light emitting means. Light Emitting Means 40 is partially encapsulated
within the molded material that forms Bite Block 10 and has a partially exposed portion
75 indicated by numeral 50. Light Emitting Means 40 is shown in FIG. 2 as a LED light.
However, it can be any light known to persons knowledgeable in the relevant arts.

Pressure-Sensing Switch 30 is placed in an "on" position when pressure is
applied to Bite Block 10 by teeth of a patient biting on Bite Block 10 when it is placed
between the teeth. Specifically, due to the flexible nature of the molded material that
80 forms Bite Block 10, pressure applied to Bite Block 10 by the teeth of the patient is
transmitted to Pressure-Sensing Switch 30 and actuates the switch.

Pressure-Sensing Switch 30 remains in an "off" position when pressure is not
applied to Bite Block 10. Pressure-Sensing Switch 30 is electrically coupled with
Battery Means 20 and Light Emitting Means 40 such that when Pressure-Sensing
85 Switch 30 is placed in the "on" position, Light Emitting Means 40 is energized causing
illumination of patient's oral cavity. Light Emitting Means 40 should be positioned
towards the area within the oral cavity that needs to be illuminated.

Viewing now FIG. 3, numeral 60 indicates a lens. Lens 60 is disposed on
Partially Exposed Portion 50. Lens 60 is used to protect Light Emitting Means 40 and
90 to focus the light for better illumination of the oral cavity.

While the present invention has been described and defined by reference to the preferred embodiment of the invention, such reference does not imply a limitation on the invention, and no such limitation is to be inferred. The invention is capable of considerable modification, alteration, and equivalents in form and function, as will occur
95 to those ordinarily skilled and knowledgeable in the pertinent arts. The depicted and described preferred embodiments of the invention is exemplary only, and is not exhaustive of the scope of the invention. Consequently, the invention is intended to be limited only by the spirit and scope of the appended claims, giving full cognizance to equivalents in all respects.